

AMATEUR SATELLITE REPORT

AMSAT® NA Newsletter for the Amateur Radio Space Program



Amateur Satellite Report is endorsed by the
American Radio Relay League as the special interest
Newsletter serving the Amateur Radio Satellite Community

Number 168
February 8, 1988

Editor: Vern Riportella, WA2LQQ

Contr. Editors:

Pete Killingsworth, KD7WZ

Managing Editor: Bob Myers, W1XT

Copyright 1988 by AMSAT® NA, The Radio Amateur
Satellite Corporation. AMSAT® is a registered trademark.

Phase 3C Launch Date Hovers At June 1st While Preps Swing Into High Gear

The European Space Agency's V-22 launch has slipped a month to late May or early June because of an Ariane 4 third stage qualification test failure. The stage must now be returned to the factory for re-work. European sources indicate the minimum turnaround time to be about 3 weeks. For its planning, AMSAT NA is now pegging the launch to be around June 1.

AMSAT organizations around the world are accelerating many programs aimed at launch support, user support, pre-launch user information distribution and media coverage. Planning for the Phase 3C AMSAT Launch Information Network Service, ALINS, continues under the leadership of Ralph Wallio, WØRPK, AMSAT Operations Vice President. Regularly scheduled AMSAT nets and a series of special pre-launch bulletin broadcasts will provide last-minute information in the week just before launch. Post-launch information will be available during several nightly AMSAT nets and daily bulletin broadcasts. Realtime launch coverage, from the final thirty minutes of countdown through shutdown of the Ariane 4 third stage, will be broadcast on various ham bands throughout the world. ARRL Headquarters station W1AW will join a team of AMSAT stations to provide unprecedented coverage of the launch. Additional details regarding frequencies and schedules of the various nets will be announced as soon as the schedules are firmed.

Local repeater groups are encouraged to re-broadcast Phase 3C ALINS traffic. While the morning (Kourou time) launch of V-22 should provide good coverage on several HF bands, direct feeds from the ALINS teleconference bridge to repeater links will be available upon request and prior coordination only. Interested parties should contact WØRPK at 1250 Highway G24, Indianola, Iowa 50125. Please include an SASE. Deadline for coordination is May 1 but there are only a limited number of ports available and they will be assigned to repeaters on a first-come, first-served basis.

The Phase 3C satellite has completed its program of testing in Marburg, West Germany and, after some last minute fine-tuning, will be prepared for shipment soon to Paris and then on to the airport at Cayenne, French Guiana. From there

it will be trucked by special vehicle to the ESA launch site at Kourou.

The V-21 launch which precedes V-22 had an estimated launch date of March 4 when Arianespace briefed AMSAT recently.

In related news, commitments for launch insurance have now been made and all AMSAT members are encouraged to share in this important activity. Substantial launch insurance donations have been made by AMSAT-UK, SA-AMSAT and BRAMSAT. Now it's your chance to help. If you haven't already done so, send in a modest contribution to the Phase 3C launch insurance campaign. It's needed now to avoid having to cut back on other services to fund the launch insurance.

Phase 3C Performance Data Reveals Vast Mode JL Improvement

With the completion of testing of the Phase 3C spacecraft in Marburg, West Germany recently, some early performance measurements are being released which suggest major link performance improvements. According to AMSAT DL President Karl Meinzer, DJ4ZC, the Mode L link in particular will be especially attractive since uplink power requirements are reduced significantly from AO-10.

Mode JL on Phase 3C combines uplinks on 24 cm and 2 meters to yield a downlink at 70 cm. The Mode L uplink is the 24 cm to 70 cm portion of the Mode JL transponder. Other Modes employed by Phase 3C are Mode B, RUDAK and Mode S.

Prior to launch, AO-10 Mode L uplink power requirements were placed in approximately the 1 to 2 kW Effective Isotropic Radiated Power (EIRP) range or 30 to 33 dBW EIRP. However, the failure of a bias regulator in the Mode L power amplifier caused it to operate well off of its optimum design bias point. Consequently, uplink power requirements increased by about 10 dB meaning that uplinks in the order of 10 to 20 kW EIRP were required for success. The increased uplink requirement strongly constrained the expected Mode L use and it never reached the popularity expected of it.

Now, however, preliminary data from AMSAT DL suggests the Phase 3C Mode L uplink power requirements could be as much as 5 dB better than the best that was

hoped for from AO-10. In practice that would mean a minimum uplink power in vicinity of 350 watts EIRP (25 dBW).

According to DJ4ZC, a 25 dBW EIRP uplink should result in a 10 dB average signal-to-noise ratio under ideal conditions. With this improved uplink requirement, Phase 3C Mode L could experience even sharper growth than that expected for AO-10. As little as 10 watts from an exciter to a single loop yagi should be sufficient if the estimates are correct. This assumes a moderately long loop yagi yielding 17 dBi gain (which is easily attainable) and 2 dB transmission line loss.

Thus, if Mode JL lives up to its pre-launch estimates, it could set off a tidal wave of interest in low power including portable Mode JL satellite operation.

Badge Craftsman K6MFJ On Road To Recovery

At least two thousand AMSAT callsign badges are proudly displayed on the chest or caps of members around the world. Virtually all of these badges were crafted by Wendell Rice, K6MFJ, of Rosamond, California. Wendell had been AMSAT's badge supplier for many years. His dedication to AMSAT provided AMSAT with a low unit cost allowing AMSAT to garner a modest profit to pay routine expenses.

Now AMSAT HQ has been saddened to learn fate has dealt Wendell successive tragedies. He lost his wife late last year and suffered a partially paralyzing stroke both within a short period. Now on the road to recovery, but unable to use his left arm, Wendell lives at a new QTH and is unable to get on the air for lack of antennas. AMSAT encourages all members to send words of encouragement to K6MFJ and, if a small team local to him can manage it, to help Wendell get back on the air at the new Rosamond QTH. To send your well-wishes to him, simply send a note on a QSL to: Wendell Rice, K6MFJ, P.O. Drawer U, Rosamond, CA, 93560. He'll appreciate it!

Ottawa Tete a Tete Yields Long-Sought LEO WAC QSL

By Tom Clark, W3IWI

I thought to share an anecdote you might find interesting. In December, I was among a small contingent of AMSAT NA officials who travelled to Ottawa, Ontario, Canada, to meet with Leo, UA3CR and Vasily, RW3DR. Over drinks after the meeting, I was chiding Vasily about the difficulty in getting QSL cards from the Soviet Union. I cited a particularly frustrating example. I had worked the EKØDTD polar expedition on RS-6 and RS-7 in 1982 but had never received a card. I told him I would like one since it would give me a satellite WAC on Low Earth Orbiting (LEO) satellites; a feat that had been accomplished by very few.

Vasily's face changed color and he started laughing. He said HE was the operator at EKØDTD during the 1982 expedition and remembered the QSO very well. He promised a card for me as soon as he returned home. This past week, an envelope arrived from Vasily from Moscow with two EKØDTD QSLs in it.

The QSO happened in the pre Phase 3 era when we were wondering when LEO WAC would finally be made. The

only QTH from which it could be achieved was in the north-eastern U.S. From there a tip of Africa (e.g. CN8BO), Hawaii (for Oceania) and a bit of Siberia (for Asia) are all visible. I seem to recall that K2ZRO and W8DX were the first LEO WACs. I can now add my name to that very short list thanks to some Glasnost and an off-handed remark to a new friend in an Ottawa restaurant.

Phase 3C Launch Info Campaign Seeks Authors

A campaign to inform the general Amateur Radio community about Phase 3C and how to use it after launch has been announced by AMSAT. Articles will be submitted to all the major domestic ham radio magazines in an effort to provide as much usable information on Phase 3C as possible at a time when the general awareness of Phase 3C will peak in mid-spring. Regular press releases to the Amateur Radio media will assure a high profile for this important event. Prospective authors are sought for the project which kicks-off immediately.

In order to make all known Phase 3C information available in a usable packet, AMSAT is compiling a Phase 3C press kit. This kit will contain technical specifications on the Phase 3C satellite, recommended typical ground station requirements and a stock of photographs and tables suitable for submission to the magazine with your article. Unfortunately, these press kits are in extremely short supply and thus can be made available ONLY to those who promise in advance to write an article on an agreed topic and schedule. General Phase 3C information brochures will be made generally available to AMSAT members in the near future, however.

Topics suitable for articles include Phase 3C operating practices, bandplans, schedules, ground stations, orbital topics, spacecraft hardware and so forth. Between 1 and 2 dozen authors are needed to quickly produce a like number of articles. Due to the limited time available, prospective authors are asked to call AMSAT HQ immediately to register. Volunteers will be contacted within 24 hours and arrangements will be made for topic selection and magazine placement.

This project definitely has a short fuse. Authors should come forth immediately by calling AMSAT HQ Monday through Friday at 301-589-6062 and simply leave your name, callsign and telephone number where you can be reached.

Software Glitch Precipitates Recall

A minor glitch has shown up in versions of AMSAT's QUIKTRAK program. However, the problem is much more limited than at first feared. The glitch affects ONLY QUIKTRAK versions 3.0 and 3.1. Versions of QUIKTRAK and SUPERTRAK for the Commodore and Apple computers are NOT affected at all. They run just fine says Bob McGwier, N4HY. The problem involves processing the day of the year in 1988 and other Leap Years.

The problem first manifests when entering Keplerian data for 1988. When entering the reference epoch in the Julian day form, that is for example, 16.12345678, the program incorrectly converts this to January 17 rather than January 16 as expected. To avoid this problem, manually convert

the Keplerian element reference epoch into the form:

DD/MMM/YY hh/mm/ss

For example: 19Dec87 051033

Then enter the reference epoch in this form. Alternatively, you may opt to continue to use 1987 Keplerian elements until the fix is installed. As a further alternative, you could use 1988 elements and then go back through the element editor to subtract one day to compensate for the glitch.

To obtain a replacement diskette for your defective QUIKTRAK version 3.0 or 3.1, return the original program diskette ONLY in a standard diskette mailer to AMSAT HQ and a replacement, Version 3.2, will be promptly returned to you. Return mailing labels will speed the response even more. Mail to AMSAT, 850 Sligo Avenue, Silver Spring, MD 20910.

In summary, the glitch affects ONLY QUIKTRAK 3.0 and 3.1 running under Microsoft DOS on IBM and clone PCs. AMSAT apologizes for any inconvenience and appreciates your support as always.

TAPR President Resigns Suddenly Citing Personal Pressures

In a surprise announcement, Lyle Johnson, WA7GXD, has resigned as President of TAPR, the Tucson Area Packet Radio group. He cited intense professional and family pressures in announcing his resignation last week. The resignation was totally unanticipated even by those working with him on a day-to-day basis.

Johnson has been recognized for his creative talents since TAPR's founding. Indeed, he has been one of the most widely recognized and respected talents in all of Amateur Radio and his reputation is legend around the world. He had been instrumental in the development of packet radio and has been widely honored as making some of the major technical contributions to the hobby in this decade.

Recently he was leading a joint TAPR-AMSAT design team working on a state-of-the-art computer for AMSAT's PAC-SAT project. According to AMSAT Engineering VP Jan King, Lyle's sudden departure leaves a gaping hole in this critical program that will not easily be filled. Johnson continues as TAPR President in caretaker status until the TAPR Board selects his replacement.

AMSAT profoundly regrets the circumstances which have led to Lyle's sudden departure from the forefront of Amateur Radio technology but understands and empathizes with his reasoning and wishes him well.

Nordski Plans On Track With February Test Announced

Preparations for the Skitrek and Nordski Projects continue apace with John Henry, VE2VQ, meeting with Canadian External Affairs Ministry officials January 14. He says progress is good towards getting the Canadian SARSAT program interfaced to the Nordski Project. Initial trials of the system are now contemplated for early February with follow-up tests as required.

Meanwhile, Martin Sweeting, G3YJO, says preparations are complete and the team at Surrey, England stands in readiness for the first tests. Nordski will provide navigation information to the North Pole Skitrekks using an un-

precedented hybrid link from the SARSAT/COSPAS satellites to Surrey's UoSAT OSCAR 11. UO-11's Digitaltalker will announce the trekker's position using its voice synthesizer on the 145.825 MHz FM downlink. The actual 90 day mission begins about March 1.

Project OSCAR Meets, Elects New Officers *by Ross Forbes, WB6GFJ President, Project OSCAR*

Project OSCAR held its Annual Meeting on Saturday, January 23rd in Los Altos Hills, CA. Over 40 of the most active OSCAR users in Northern California attended the meeting. After introductions, reports and other formalities, those in attendance were qualified to vote for the Board of Directors. After a brief, but spirited campaign, the following were elected for two year terms:

Re-elected:

Walt Read, W6ASH

Ross Forbes, WB6GFJ

Jim Eagleson, WB6JNN

Nick Marshall, W6OLO

John Pronko, W6XN

Newly Elected:

Gary Nakayama, KH6JRB

Jeffery Pawlin, WA6KBL

The annual meeting was then adjourned for a brief coffee break, prior to the Board of Directors meeting.

Following the Annual Meeting, the Board of Directors was called to order by Acting Chairman, N6TX. (Chairman John Pronko, W6XN, was unable to attend the meeting due to his daughter's marriage. The Board felt that was an excellent reason for his absence!) Elections were held for officers of the Corporation for 1988, with the following results:

Chairman of the Board: Paul Shuch, N6TX

President: Ross Forbes, WB6GFJ

Secretary: Nick Marshall, W6OLO

Treasurer: Gil Morris, WB6KCJ

N6TX then announced appointments for the 1988 Term:

Director of User Services: Gary Nakayama, KH6JRB

Technical Director: Jeffery Pawlin, WA6KBL

Highlights of the Board of Directors meeting include a firm commitment to hold quarterly Board meetings during the year. N6TX announced the next meeting will be in early March to discuss necessary updates to the Project OSCAR By-Laws. The Board then expressed its desire to see a commitment to increase the technical output of Project OSCAR. Also, the Board wants to support AMSAT-NA in a positive nature, and newly elected President WB6GFJ announced his commitment to make this happen.

Since the 1987 Board meeting discussed the proposed formation of AMSAT-International, WB6GFJ reported on comments made on this subject at the recent AMSAT-NA Board meeting. Project OSCAR's board directed WB6GFJ to contact AMSAT-NA and express its interest to supporting the concept, and offering its assistance towards that objective.

After a few brief announcements were made, each Board member was polled for his thoughts concerning the issues Project OSCAR should address during the coming year.

While the comments were varied, clearly the two main priorities were for increased technical output from the Bay Area and positive support for AMSAT-NA so the Amateur Radio satellite program will continue to move forward.

AO-10 Ops Schedule

Here is the AO-10 operating schedule for the next period. According to AO-10 command station ZL1AOX, the sun angle will diminish to unusable levels two weeks sooner than expected. Consequently, the schedule has been revised to curtail AO-10 use after February 14.

AMSAT OSCAR 10 Transponder Operating Schedule Revised 16Jan88

Time Frame	Mode B Operating Times in MA
Jan 18 thru Jan 31	0 thru 169 and 231 thru 255
Feb 01 thru Feb 14	0 thru 179 and 241 thru 255

As always, please insure you use the lowest uplink power levels so as to insure satellite health as well as good communications.

Shuttle Engine Backup Design Retrieved To Salvage Launch Schedule

Confirming a tentative decision made a week ago, NASA has finalized plans to use a back-up design for a space shuttle rocket booster part that failed last month during a full

scale test burn. According to Rear Admiral Richard Truly, NASA Associate Administrator for Space Flight, "If the alternative part passes rigorous testing and our other schedules are met, July 15th is the earliest we could fly."

After the last full scale test firing of the re-designed solid fuel rocket motor, officials noted that a carbon boot ring, designed to protect a nozzle swiveling joint, has shattered. The performance of the rocket had not been affected since the failure occurred during nozzle movement after the firing was completed. The failed boot ring, thought to have been a final configuration, will be replaced by the back-up design, tested successfully last August.

One noteworthy difference between the August and December tests was the amount of swivel the nozzles were subjected to. The nozzles are swiveled in flight to vector thrust and steer the shuttle. In the August test, about two degrees of swivel was used. In the December test, however, a full seven degrees of swivel was used. The December test involved exercising the swivel mechanism to the extreme limit to which the nozzle would be swiveled; a situation that would occur only during an in-flight emergency. NASA will subject the back-up design to the higher swivel angle test.

NASA Administrator James Fletcher sought to defuse speculation election year politics will affect the shuttle launch schedule. He announced his firm commitment to fully testing and verifying all aspects of the shuttle and to not resume launches until all safety concerns were satisfied. The decision to commence launchings will be made outside of the political arena he said flatly.

AMSAT® NA

The Radio Amateur Satellite Corporation

Post Office Box 27
Washington, DC 20044
(301) 589-6062

Non-Profit
Organization
Second Class
POSTAGE PAID
at
Waterbury, Conn.

AMSAT Dues Increase Effective March 1

AMSAT Headquarters has announced that a member dues increase will go into effect March 1. Effective March 1st, the new rates are:

- U.S. Domestic members: \$29
- Canada and Mexico: \$36
- Other foreign: \$42

Beginning March 1, all overseas annual members will receive ASR directly from AMSAT via Air Mail. Previously, re-mailers had helped in distribution by re-mailing from their locale. However, the additional delays incurred and complaints from members concerning the re-mailing process has resulted in the change in overseas mailing method and rates. Overseas Life Members may opt to have their ASR sent by Air Mail by remitting the additional postage costs.

Annual members should renew early to beat the dues increase. You may renew for several years in advance.

LM-1096 KAGM 99.81
MAGNUSKI, HANK
2019 BARBARA DR.
PALO ALTO CA 94303

Amateur Satellite Report (ISSN 0889-6089) is published biweekly for \$16 (inseparable from annual membership dues of \$24) by AMSAT, Post Office Box 27, Washington, DC 20044. Second class postage paid at Silver Spring, MD and additional mailing offices. POSTMASTER: send address changes to *Amateur Satellite Report*, Post Office Box 27, Washington, DC 20044.